# Northern Rockies Winter Review - 2010-2011

The winter of 2010-2011 was a wet one, a winter typical of the La Nina pattern we were under. The past winter weather patterns were driven largely by La Nina. La Nina is a phenomenon where the waters of the equatorial pacific cool to below normal. This past winter the water temperature departures were exceptionally large, nearly 2 degrees Celsius below normal. Strong La Nina's which 2010-11 was occurring infrequently. The last time a La Nina of this magnitude was experienced was in the winters of 1988-89, 1973-74 and 1955-56.

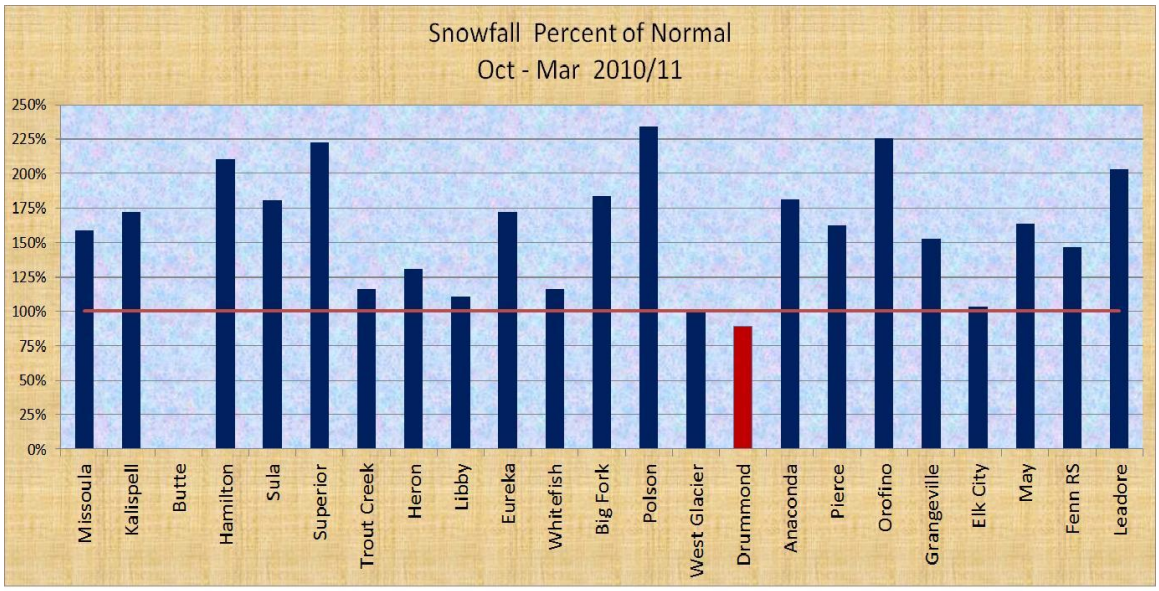
The majority of the Western Montana and North Central Idaho experienced above normal precipitation and well above normal snowfall. Mountain Snowpack's across the Western Montana and North Central Idaho were and continue to be very high. The one exception to the wet winter was southwest Montana where below normal precipitation and snowfall occurred.

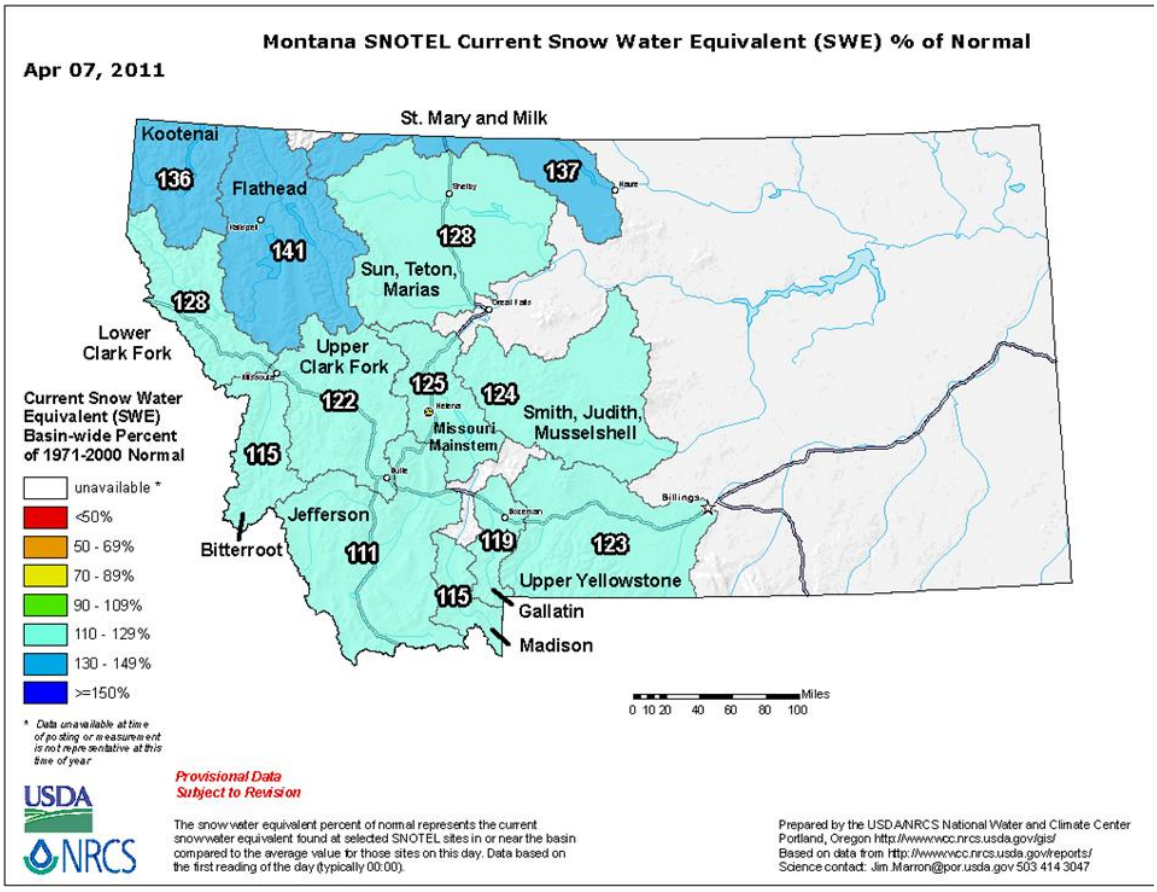
A couple of notable precipitation amounts were in Missoula and Polson. Missoula received 64 inches of snow from Oct 1- March 31st. This is the 8th snowiest winter since 1893 and the 3rd snowiest winter in 40 years. The first was 1996-97 and second 1971-72. The 1996-97 winters was by far the snowiest and wettest winter in the northern Rockies on record and will be hard to surpass.

Polson received 2-3 feet of snow in one storm in late December. Their snowfall totals for the season was 74.5 inches, the third snowiest on record (back to 1912). The top 2 snowiest winters were 1996-97 and 1971-72.

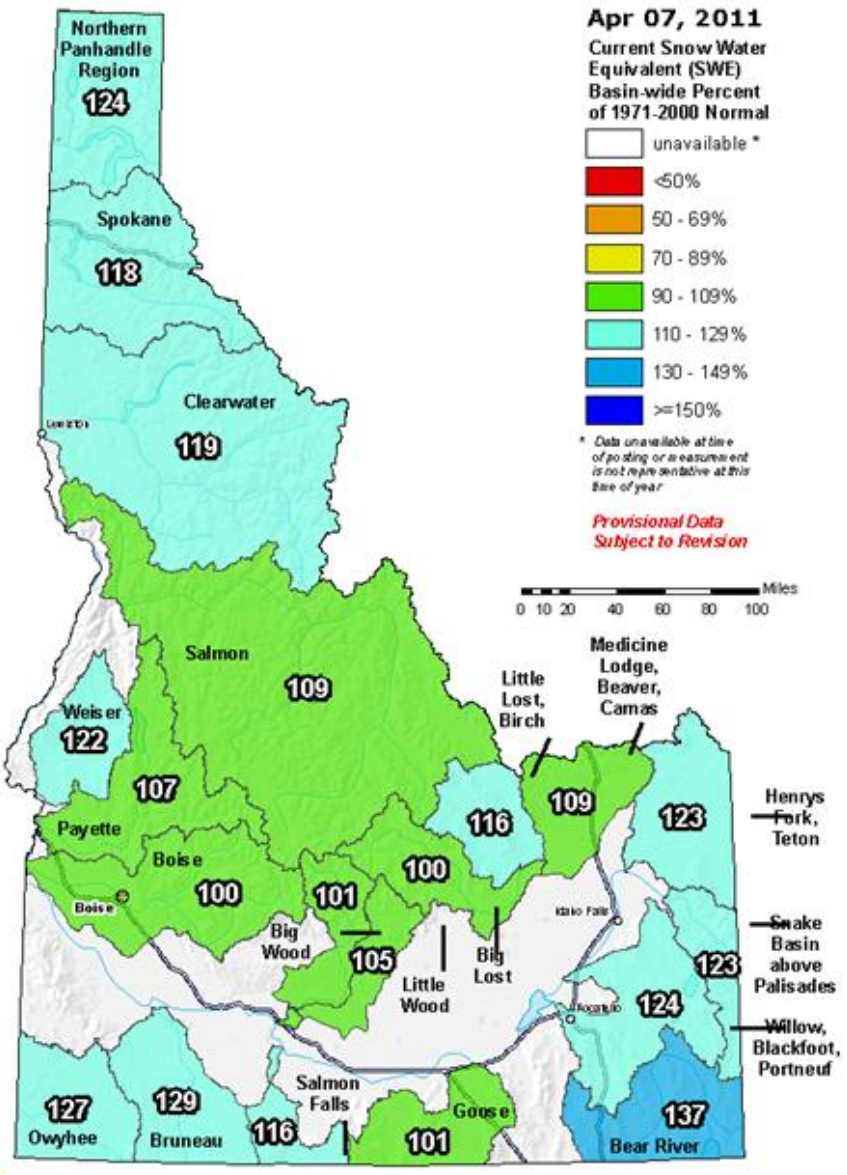
Temperatures this winter were slightly below normal by 1-2 degrees. There was one exceptional or big arctic outbreak which occurred November 22-24th across all of Western Montana. Widespread minimum temperatures of 10 below zero or less were recorded, with some 20 below readings in the vicinity of Butte.

The La Nina has decreased to a weak category and is expected to diminish by May where neutral conditions are expected to occur through the summer. There is uncertainty for the summer outlook as the correlations with El Nino or La Nina are not very good during this season. The 14 day outlook through April 22nd calls for continued cooler than normal temperatures with above normal precipitation.


Snowfall Percent of Normal
Oct - Mar 2010/11
250%
225%
200%
175%
150%
125%
100%
75%
50%
25%
0%
Missoula
Kalispell
Butte
Hamilton
Sula
Superior
Trout Creek
Heron
Libby
Eureka
Whitefish
Big Fork
Polson
West Glacier
Drummond
Anaconda
Pierce
Orofino
Grangeville
Elk City
May
Fenn RS
Leadore


Montana SNOTEL Current Snow Water Equivalent (SWE) % of Normal
Apr 07, 2011
St. Mary and Milk
Kootenai
136
Flathead
137
141
128
Sun, Teton, Marias
128
Lower Clark Fork
Upper Clark Fork
125
124
122
Smith, Judith, Musselshell
Missouri Mainstem
115
Jefferson
Bitterroot
111
119
123
Upper Yellowstone
115
Gallatin
Madison
Current Snow Water Equivalent (SWE) Basin-wide Percent of 1971-2000 Normal
unavailable *
<50%
50 - 69%
70 - 89%
90 - 109%
110 - 129%
130 - 149%
>=150%
* Data unavailable at time of posting or measurement is not representative at this time of year
Miles
0 10 20 40 60 80 100
Provisional Data
Subject to Revision
USDA
NRCS
The snow water equivalent percent of normal represents the current snowwater equivalent found at selected SNOTEL sites in or near the basin compared to the average value for those sites on this day. Data based on the first reading of the day (typically 00:00).
Prepared by the USDA/NRCS National Water and Climate Center
Portland, Oregon http://www.wcc.nrcs.usda.gov/gis/
Based on data from http://www.wcc.nrcs.usda.gov/reports/
Science contact: Jim.Marron@por.usda.gov 503 414 3047

# Idaho SNOTEL Current Snow Water Equivalent (SWE) % of Normal

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Prepared by the USDA/NRCS National Water and Climate Center
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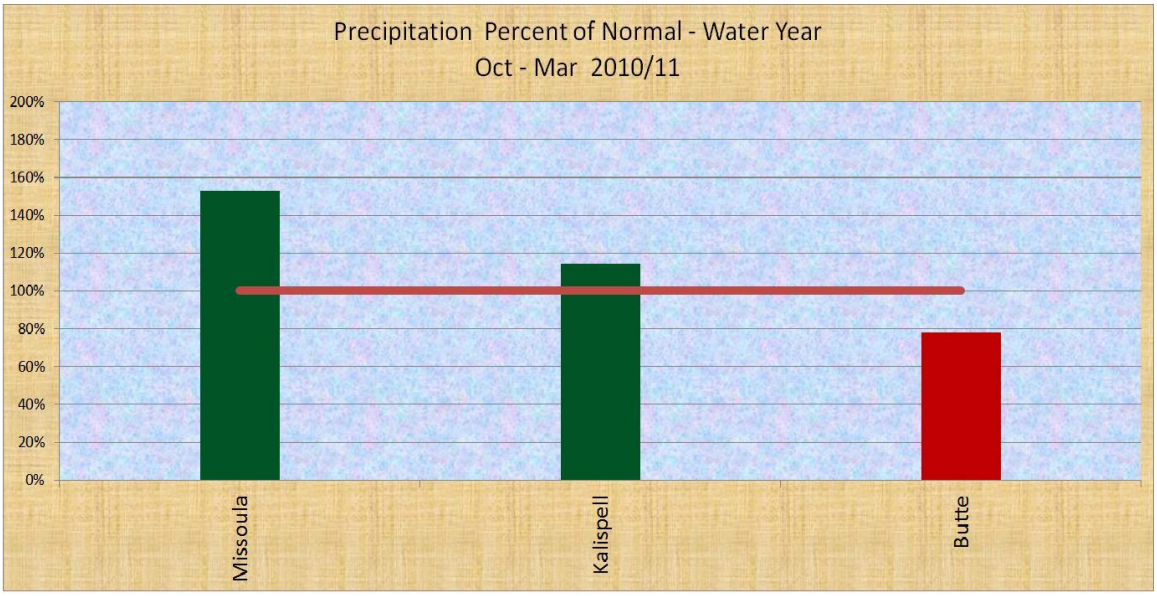
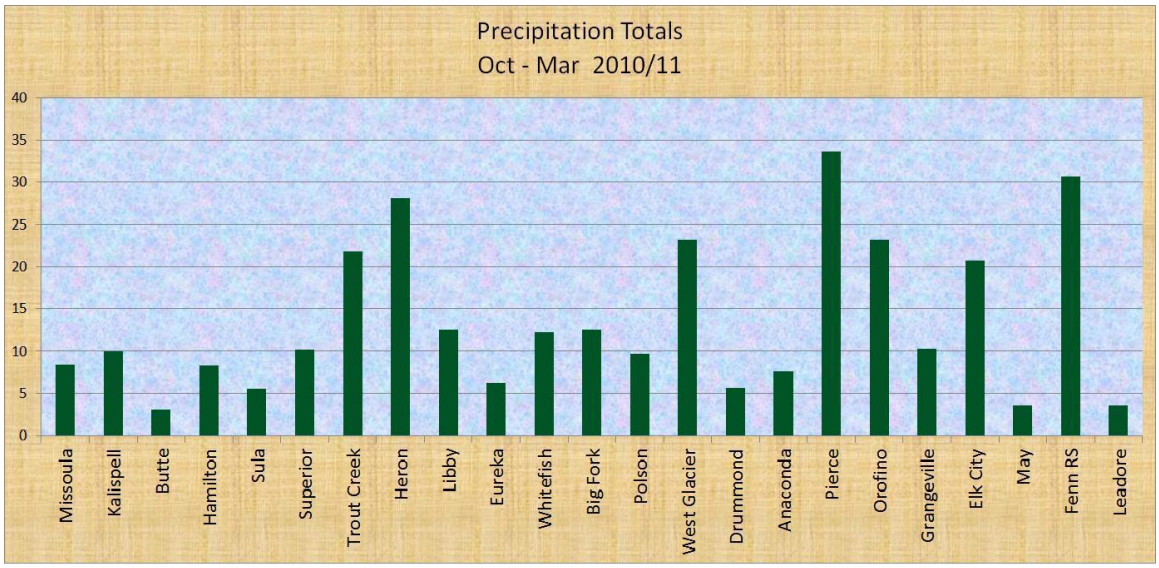
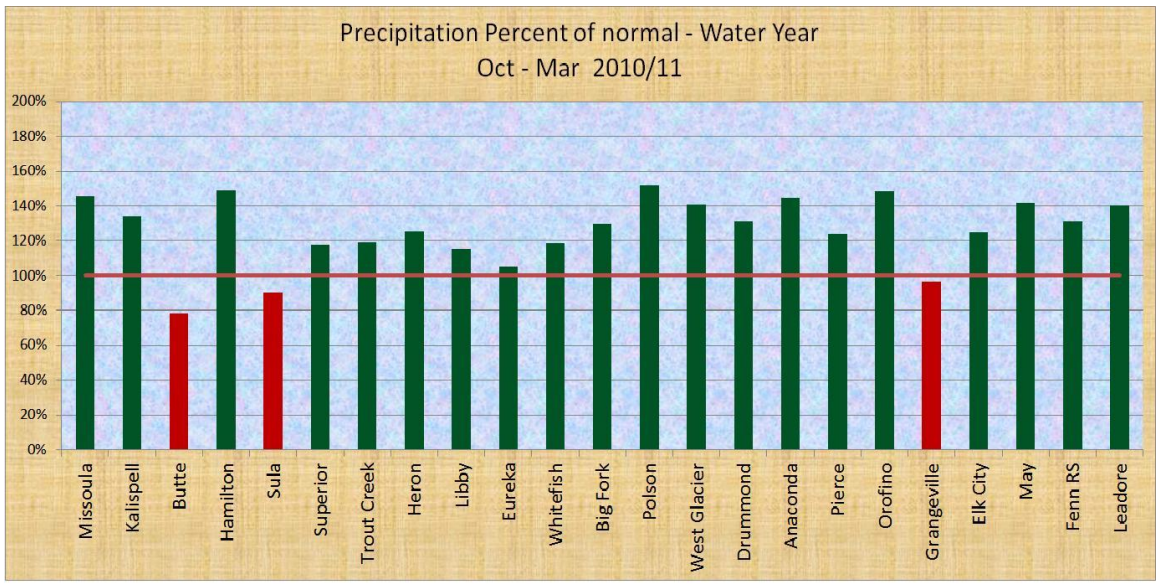

Precipitation Percent of Normal - Water Year
Oct - Mar 2010/11
200%
180%
160%
140%
120%
100%
80%
60%
40%
20%
0%
Missoula
Kalispell
Butte


Precipitation Totals
Oct - Mar 2010/11
40
35
30
25
20
15
10
5
0
Missoula
Kalispell
Butte
Hamilton
Sula
Superior
Trout Creek
Heron
Libby
Eureka
Whitefish
Big Fork
Polson
West Glacier
Drummond
Anaconda
Pierce
Orofino
Grangeville
Elk City
May
Fenn RS
Leadore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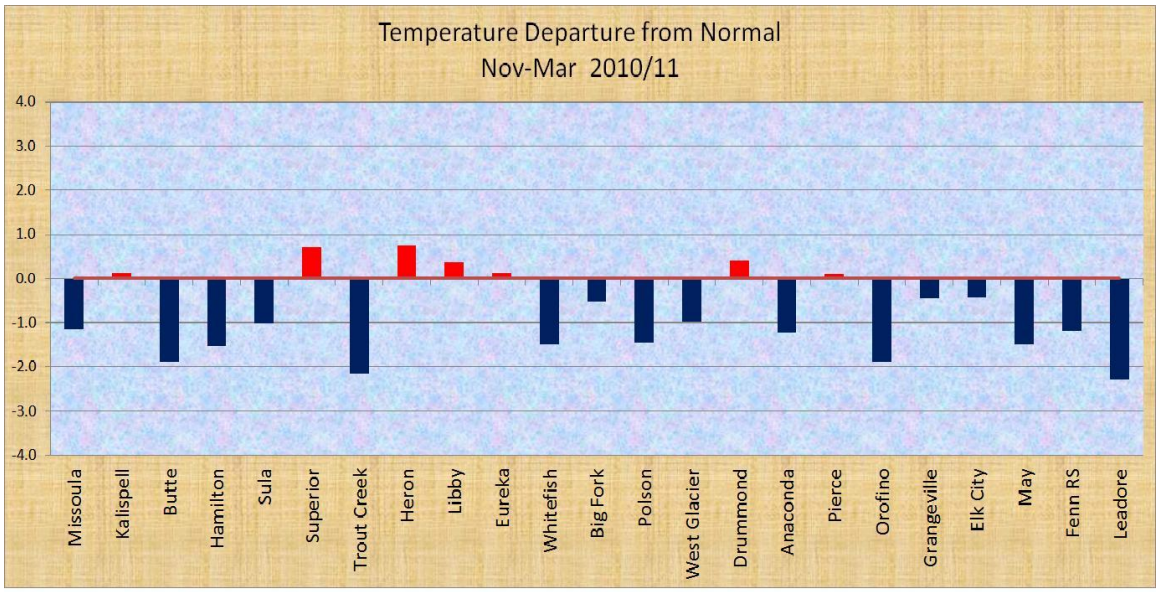
Temperature Departure from Normal
Nov-Mar 2010/11
4.0
3.0
2.0
1.0
0.0
-1.0
-2.0
-3.0
-4.0
Missoula
Kalispell
Butte
Hamilton
Sula
Superior
Trout Creek
Heron
Libby
Eureka
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